

Space Studies of the Earth-Moon System, Planets, and Small Bodies of the Solar System (B)
Small Body Exploration Sciences: From the Solar System to Interstellar Objects (B1.1)
Consider for oral presentation.

ANALYSIS OF SAMPLES FROM ASTEROID RYUGU RETURNED BY HAYABUSA2

Tomoki Nakamura, tomoki.nakamura.a8@tohoku.ac.jp
Tohoku University, Sendai, Japan
Megumi Matsumoto
Tohoku University, Sendai, Japan, m_matsumoto@tohoku.ac.jp
Kana Amano
Tohoku University, Sendai, Japan, amakana@dc.tohoku.ac.jp
Yuma Enokido
Tohoku University, Sendai, Japan, yuma.enokido.r8@dc.tohoku.ac.jp
Michael Zolensky
, United States, michael.e.zolensky@nasa.gov
Takashi Mikouchi
The University of Tokyo, Tokyo, Japan, mikouchi@um.u-tokyo.ac.jp
Hayabusa2 initial analysis stone and core team
H. Genda, S. Tanaka, M. Y. Zolotov, K. Kurosawa, S. Wakita, R. Hyodo, H. Nagano, D. Nakashima, Y. Takahashi, Y. Fujioka, M. Kikuri, E. Kagawa, M. Matsuoka, A. J. Brearley, A. Tsuchiyama, M. Uesugi, J. Matsuno, Y. Kimura, M. Sato, R. E. Milliken, E. Tatsumi, S. Sugita, T. Hiroi, K. Kitazato, D. Brownlee, D. J. Joswiak, M. Takahashi, K. Ninomiya, T. Takahashi, T. Osawa, K. Terada, F. E. Brenker, B. J. Tkalcec, L. Vincze, R. Brunetto, A. Aléon-Toppani, Q. H. S. Chan, M. Roskosz, J.-C. Viennet, P. Beck, E. E. Alp, T. Michikami, Y. Nagaashi, T. Tsuji, Y. Ino, J. Martinez, J. Han, A. Dolocan, R. J. Bodnar, M. Tanaka, H. Yoshida, K. Sugiyama, A. J. King, K. Fukushima, H. Suga, S. Yamashita, T. Kawai, K. Inoue, A. Nakato, T. Noguchi, F. Vilas, A. R. Hendrix, C. Jaramillo, D. L. Domingue, G. Dominguez, Z. Gainsforth, C. Engrand, J. Duprat, S. S. Russell, T. Bonato, C. Ma, T. Kawamoto, E. Palomba, H. Yurimoto, R. Okazaki, H. Yabuta, H. Naraoka, K. Sakamoto, S. Tachibana, S. Watanabe, Y. Tsuda

After returning to Earth in the winter of 2020, the samples from Cb-type asteroid Ryugu were stored under atmosphere-free conditions at the Extraterrestrial Materials Curation Center of ISAS/JAXA, and investigated for basic descriptions (sample imaging, weighing, etc.). They were distributed to six initial analysis teams in Japan in June 2021. The "Stone" team, in charge of analysis of coarse particles (>1 mm in size), conducted a series of analyses using a variety of techniques including reflectance spectra measurement, synchrotron-radiation three-dimensional elemental and mineralogical analysis, bulk elemental analysis using muon beam, Fe valence state measurement by XANES and Mössbauer spectroscopy, detailed mineralogical and petrological characterization by scanning and transmission electron microscopes. Physical and thermal properties of Ryugu samples were measured to understand the response to shock

and heating. In this talk, I would like to introduce summary of analysis results and what comes to be known about the formation and evolution of asteroid Ryugu.